

## REVISION OF *DESMANTHODIUM* (ASTERACEAE)

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### ABSTRACT

The genus *Desmanthodium* (Asteraceae, Heliantheae) is treated as having seven species, six of these indigenous to México and Central America, and one to South America. The recently described *D. congestum* Arriagada & Stuessy, is believed to be the same as *D. tomentosum*. A key to the species, selected illustrations, and complete synonymy are provided, along with dot maps showing their distribution.

KEY WORDS: Asteraceae, Heliantheae, *Desmanthodium*, México, systematics

The present study has been occasioned by my treatment of the tribe Heliantheae for the Asteraceae of Mexico (*cf.*, Turner 1996). As conceived here, *Desmanthodium* is a small mostly montane genus of seven species, six of these native to México. The species are very closely related, and if partitioned into infrageneric components they would seem to fall into two groups: a strictly herbaceous element, *D. ovatum* Benth., with the remainder forming a subclade of robust suffruticose herbs, subshrubs or shrubs to 4 m high.

*Desmanthodium* was first proposed by Bentham in 1876 with the description of two Mexican species, *D. perfoliatum* Benth. and *D. ovatum*, the former subsequently selected as the generic type. These were positioned by Bentham (*Genera Plantarum*, 1876) in the tribe Heliantheae, subtribe Milleriinae, between the genera *Riencourtia* and *Clibadium*. Thereafter, among the species recognized here, Hemsley added *D. guatemalense* Hemsl. in 1881; Greenman proposed *D. fruticosum* Greenm. in 1903; T.S. Brandegee described *D. tomentosum* T.S. Brandegee in 1914; Blake in 1924 conjured up *D. blepharodon* S.F. Blake, and Turner concocted *D. hintoniiorum* B.L. Turner in 1996. A few other names have been proposed, but these have been treated as synonyms.

There has been no revision of the genus prior to the present study, although Robinson (1981) provided a succinct account of its subtribal position, as noted under comments presented below (*cf.*, Generic Relationships).

## CHROMOSOMES

As indicated in the list of chromosome counts tabulated below, all counts were determined from meiotic material. Fay (1974) was the first worker to report a chromosome number for *Desmanthodium*, this being a count of  $n=18$  pairs for *D. fruticosum*. Subsequent workers have confirmed this number for the genus, except for Ralston, *et al.* (1989) who report a count of  $n=17$  pairs for *D. fruticosum*. The latter count should be confirmed since it does not agree with previous reports and was not documented by photographs or camera lucida drawings. In fact, none of the counts in *Desmanthodium* has been documented by photographs or illustrations.

CHROMOSOME COUNTS FOR *DESMANTHODIUM*

<i>D. fruticosum</i> $2n=36$	Fay (1974)	Oaxaca: Cronquist 10855
<i>D. fruticosum</i> $2n=36$	Keil & Stuessy (1977)	Mexico: Stuessy 3129
<i>D. fruticosum</i> $2n=36$	Keil, <i>et al.</i> (1988)	Guerrero: Keil 15356
<i>D. fruticosum</i> $2n=34$	Ralston, <i>et al.</i> (1989)	Guerrero: Turner 15876
<i>D. perfoliatum</i> $2n=36$ (reported as <i>D. caudatum</i> )	Sundberg, <i>et al.</i> (1986)	Oaxaca: Turner 80A

## GENERIC RELATIONSHIPS

Robinson (1981) recognized *Desmanthodium*, along with *Stachycephalum*, as the only two genera in his subtribe Desmanthodiinae, numbered 6 from among 32 subtribes in his breakdown of the tribe Heliantheae. *Desmanthodium* differs markedly from *Stachycephalum* in having its ray florets completely enclosed in a sac or vesicle, in addition to yet other characters discussed by Robinson. He reckoned the Desmanthodiinae to be closely related to his subtribe number 7, the Clibadiinae, which contained three genera (*Clibadium*, *Lantanopsis*, and *Riencourtia*).

Nearly all workers would agree that the two subtribes recognized by Robinson are highly specialized. Indeed, Robinson (1981, p. 40) conjectures that the so called vesicle which houses the ray florets in *Desmanthodium* might actually be a loosened part of the ovary wall, as opposed to an enveloping involucre bract or phyllary; so interpreted this would be a unique feature in the Asteraceae. Whether or not *Stachycephalum* is properly positioned with *Desmanthodium* in the subtribe Desmanthodiinae is moot; it might with equal morphological justification be included with or near *Clibadium* or *Lantanopsis* in the subtribe Clibadiinae. The probable base chromosome number of *Desmanthodium* ( $x=18$ ) differs from that of *Clibadium* ( $x=16$ , cf. Stuessy & Arriagada 1993) and *Riencourtia* ( $x=ca. 16$ ); unfortunately chromosome counts for *Stachycephalum* are unreported.

## TAXONOMY

*DESMANTHODIUM* Benth.

Suffruticose stiffly erect perennial herbs to 1 m high, or erect to sprawling shrubs or subshrubs to 4 m high. Leaves simple, opposite throughout, subpinnately nervate with usually 3 prominent nerves from above the base. Heads ill-defined, arranged in congested bracteate glomerules, the glomerules in turn disposed in very open cymose panicles, or relatively congested in flat-topped cymes. Involucral bracts 1-3, separate to the base, not forming a clearly defined involucre. Receptacle plane, epaleate, except for an outer series of pales which completely enwrap the subtended ray florets. Ray florets 1-3, pistillate, fertile, enclosed in sac-like bracts; corollas ca. 1 mm long, the ligule absent or nearly so. Disk florets 5-10 per head, perfect but sterile, the ovaries elongating with age; corollas small, white, 5-lobed; tubes about as long as or somewhat longer than the funnellform or campanulate throats. Acheres lenticular, black, minutely striate, completely enclosed in a persistent papery sac. Base chromosome number,  $x=18$ .

Type species, *Desmanthodium perfoliatum* Benth.

## KEY TO SPECIES

1. Suffruticose herbs with slender simple stems 0.4-1.0 m high..... 1. *D. ovatum*
1. Shrubs, or arching to sprawling thick-stemmed shrublets 1-4 m high.....(2)
  2. Leaves sessile, those at midstem clearly perfoliate.....2. *D. perfoliatum*
  2. Leaves petiolate, never perfoliate. ....(3)
3. Stems and branches of the capitulescence glabrous; heads on thick stout peduncles, scarcely exceeding the foliage; Oaxaca, México (Mpio. Miahuatlán). ....3. *D. hintoniorum*
3. Stems and branches of the capitulescence clearly pubescent, either in lines or throughout. ....(4)
  4. Uppermost stems and branches of the capitulescence tomentose throughout, the vestiture mostly 0.5-0.7 mm high; southwesternmost Chiapas, México and closely adjacent Guatemala.....5. *D. tomentosum*
  4. Uppermost stems and branches of the capitulescence pubescent in lines, the vestiture mostly 0.2-0.4 mm high; widespread.....(5)
5. Leaves on primary stems mostly thin, the blades 5-10(-15) cm long, decidedly ovate, widest near base or well below the middle (rarely not); Pacific montane slopes of western México from Durango to Oaxaca. .... 4. *D. fruticosum*
5. Leaves on primary stems mostly thick (subsucculent), the blades (10-)15-20 cm long, elliptical, mostly widest at or near the middle; Guatemala, Honduras, El Salvador and South America. ....(6)
6. Leaves on primary stems with blades gradually tapering, ciliate at the base, the petioles 3-15 mm long; Venezuela..... 7. *D. blepharodon*

6. Leaves on primary stems with blades not tapering upon the petioles, glabrous at the base, the petioles 1-5 mm long; Guatemala, Honduras and El Salvador. .... 6. *D. guatemalense*

1. *DESMANTHODIUM OVATUM* Benth., Hook. Icon. Pl., t. 1116, 1872. Fig. 1. TYPE: MEXICO. Oaxaca: "woods of the province of Oaxaca", 7000-8000 ft, Nov-Apr 1840, *Galeotti 2081* (LECTOTYPE [selected here]: K; Photoislectotype: MICH!). Two collections were cited in the protologue, that selected here as lectotype and *Andrieux 319* from the Sierra San Felipe, Oaxaca. *Desmanthodium lanceolatum* Greenm., Proc. Amer. Acad. Arts 34:576. 1899. TYPE: MEXICO. Morelos: mountains above Cuernavaca, 2100 m, 9 Aug 1898, *C.G. Pringle 6940* (HOLOTYPE: MO; Isotype: UC!).

Perennial glabrous herbs with simple, mostly unbranched stems 20-100 cm high; roots thickened, fasciculate or arising from short stout rhizomes (cf., *Iltis 1289* [TEX]). Stems sparsely puberulent to glabrate, 2-4 mm thick below. Leaves well-spaced along the stem, mostly shorter than the internodes, those at midstem mostly 5-15 cm long, 3-6 cm wide; petioles 5-35 mm long; blades ovate to subdeltooid, gradually or abruptly tapering upon the petioles, glabrous or nearly so. Heads arranged in relatively few, long-pedunculate aggregations. Outer and interior bracts of the aggregations ovate, subsucculent, their apices white or whitish. Heads 8-24 in any one aggregation, the whole superficially resembling a head (syncephalum), these borne upon peduncles 1-8 cm long. Heads with 1-3 pistillate florets and 12-16 sterile disk florets. Achenes flattened tangentially, ca. 3 mm long, 1.5 mm wide, encased in sac-like sparsely pubescent involucre bracts.

DISTRIBUTION (Figure 5) AND ECOLOGY: México State, Morelos, Puebla and Oaxaca, mostly oak woodlands, 2000-2600 m, Jul-Aug.

REPRESENTATIVE SPECIMENS: MEXICO. México State: *Rzedowski 30918* (LL,MEXU). Puebla: *Tenorio 7492f* (TEX). Oaxaca: *Panero 3617* (TEX); *Pringle 4694* (LL,MEXU); *Soule 2422* (MEXU,TEX).

This species is well represented in herbaria and, because of its herbaceous habit, relatively easily recognized. Most collectors note the plants to be between 20-100 cm high; however, label data on *Hinton 2758* (LL) records the plant to be 1.5 m high, but this is not evident from the sheet concerned.

I am unable to distinguish *Desmanthodium lanceolatum* from *D. ovatum*. The former name has been applied to plants having leaf forms with lanceolate to narrowly ovate blades which taper upon the petioles. Both leaf forms may occur in the same general region and intergrades between such forms occur. Exceptionally petiolate blades of *D. ovatum* also occur (Figure 1), but most collections lie somewhere between these extremes, the blades at midstem usually gradually tapering upon the petioles.

One might consider erecting a monotypic section to house *Desmanthodium ovatum*, for it is sufficiently distinct from the shrubby elements of *Desmanthodium* to perhaps warrant such recognition. Its habit, relatively few aggregations to a capitulescence and generally more numerous staminate florets are diagnostic.

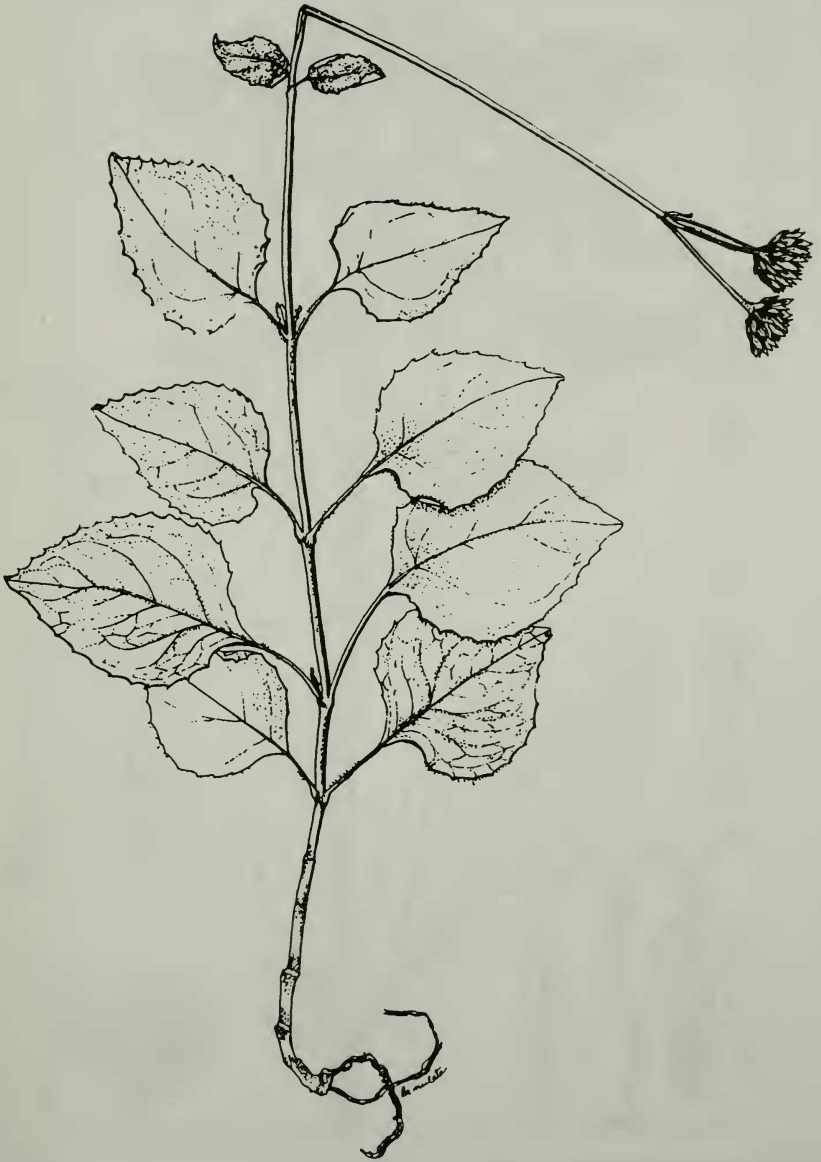


Figure 1. *Desmanthodium ovatum* (Panero 3617).

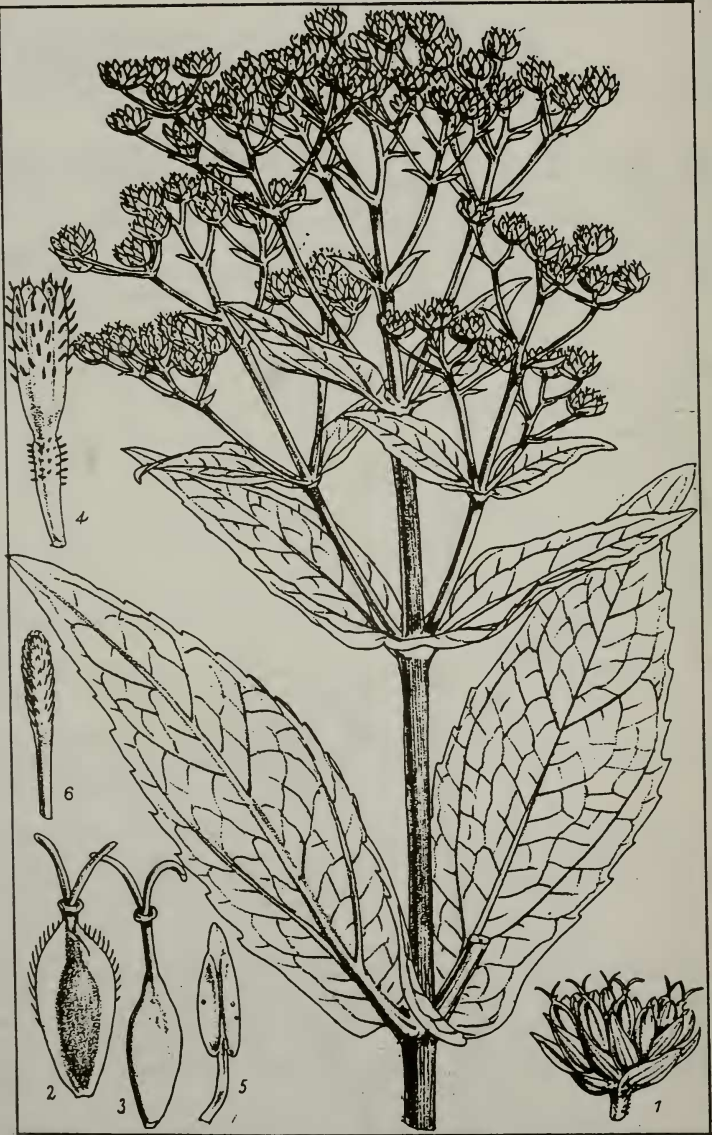


Figure 2. *Desmanthodium perfoliatum* (t. 1116, 1887).

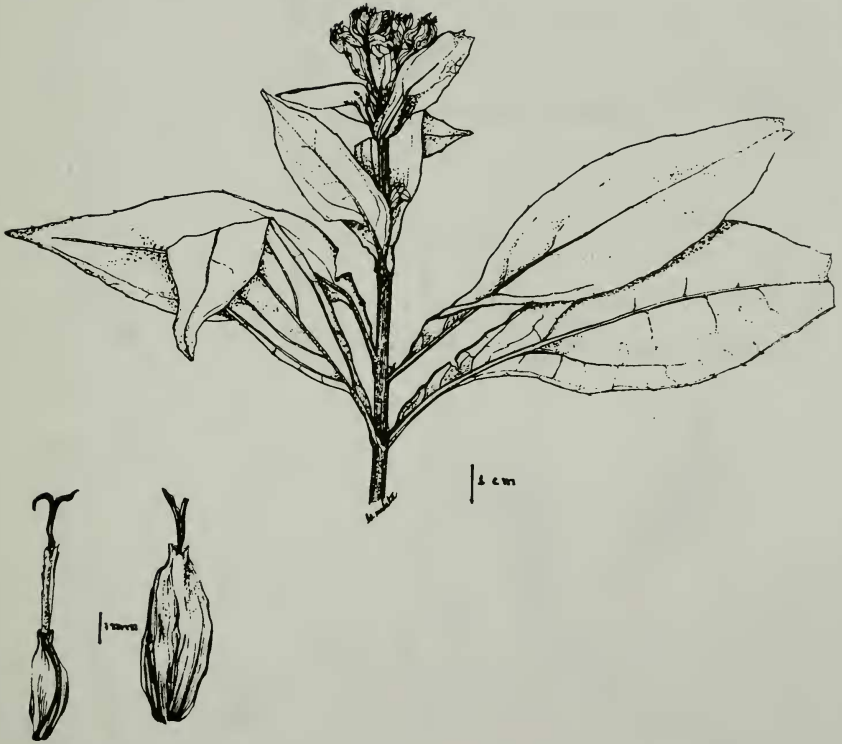


Figure 3. *Desmanthodium hintoniorum* (holotype).



Figure 4. Distribution of *Desmanthodium fruticosum* (open circles); *D. guatemalense* (open triangles); *D. hintoniorum* (closed triangle); *D. tomentosum* (closed circles).



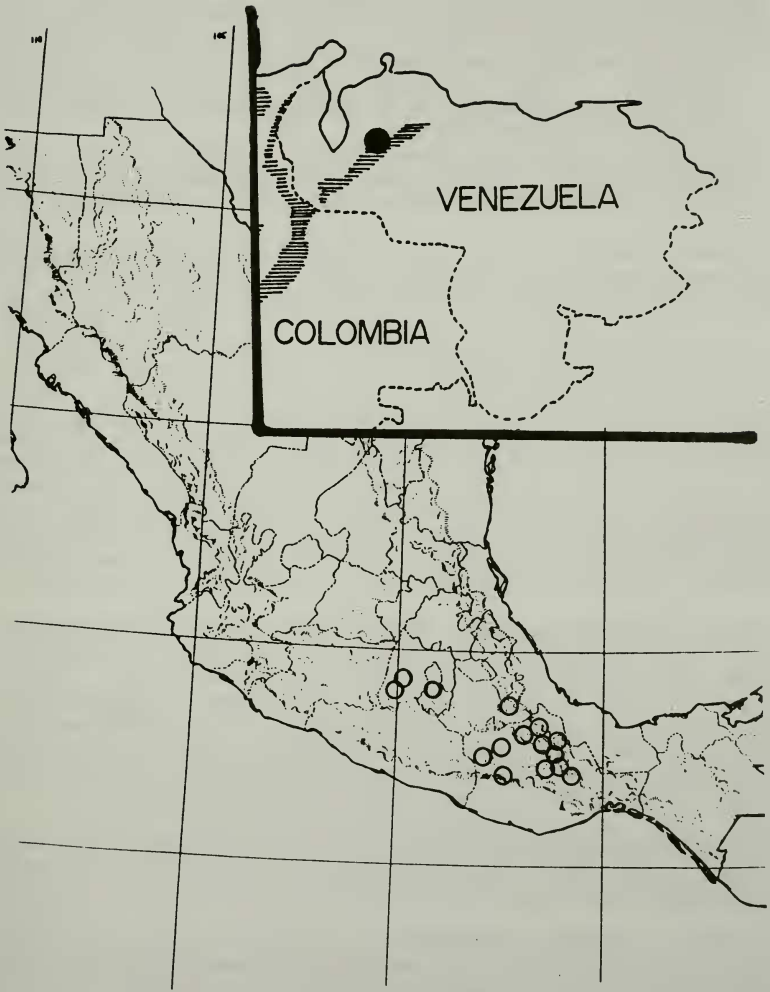


Figure 5. Distribution of *Desmanthodium ovatum*; inset, *D. blepharodon* (South America).

2. *DESMANTHODIUM PERFOLIATUM* Benth., Hook. Icon. Pl. 12:15. t. 1116. 1887. TYPE: MEXICO. Oaxaca: w/o specific locality, 4500 ft, 1835-1840, *H.G. Galeotti 2050* (HOLOTYPE: K).  
*Flaveria perfoliata* Klatt, Leopoldina 23:146. 1887. TYPE: MEXICO. Oaxaca(?): "Cumbre de Estepe", 1841-43, *F.M. Liebmann 482* (LECTOTYPE [selected here]: GH!). Rydberg (1915) was the first to call attention to the synonymy listed here.  
*Desmanthodium caudatum* S.F. Blake, J. Wash. Acad. Sci. 28: 488. 1938. TYPE: MEXICO. Chiapas: Escuintla, Finca Juárez, 12 Aug 1937, *E. Matuda 1750* (HOLOTYPE: US!; Isotype: MEXU; Fragment holotype: LL!).

Shrublets or shrubs 1-4 m high. Much resembling *Desmanthodium guatemalense* but the leaves relatively thin and clearly perfoliate, the blades united below, not at all petiolate, and heads more numerous; chromosome number,  $2n = 36$ .

DISTRIBUTION (Figure 6) AND ECOLOGY: Guerrero, Oaxaca and Chiapas in pine-oak forests, 900-1700 m; Jul-Nov.

REPRESENTATIVE SPECIMENS: MEXICO. Guerrero: 15.8 mi by road from Chilpancingo west towards Omiltemi, pine-oak forest, 2000 m, rare among limestone boulders, 27-28 Jul 1968, *Anderson 4935* (MICH). Oaxaca: Sierra San Felipe, 7500 ft, 13 Aug 1894, *Pringle 4799* (MICH); 3.6 mi SW of Suchixtepec along road to Puerto Angel, 22 Aug 1980, *Turner 80A-11* (TEX). Chiapas: Mpio. Bochil, 4 mi NE Bochil, 4500 ft, 21 Aug 1965, *Breedlove 12073* (LL, MICH); ca. 16 mi W of San Cristóbal de las Casas, 26 Aug 1976, *Hartman 4179* (TEX); Mpio. Amatenango del Valle, 5900 ft, 5 Sep 1966, *Ton 1104* (LL).

Like *Desmanthodium fruticosum*, *D. perfoliatum* is a highly variable, relatively common species, especially in Chiapas. Only a single collection is known from Guerrero (cited above) where it was reported to be "Rare, seen once." The plant concerned has relatively narrow thin leaves (on secondary shoots), the blades markedly narrowed below with weakly developed auriculate-perfoliate bases. Specimens identified as *D. caudatum* are robust with very large, relatively thin leaves, but similar leaf forms occur across the range of the species (e.g., in Oaxaca, *Turner 80A-11*, cited above), and there seems little justification for its recognition.

3. *DESMANTHODIUM HINTONIORUM* B.L. Turner, Phytologia 79:317. 1996. Figure 3. TYPE: MEXICO. Oaxaca: Mpio. Miahuatlán, La Sirena, 2525 m, 23 Oct 1995, *Hinton, et al. 26409* (HOLOTYPE: TEX!).

Shrub to 1.5 m high, the stems clearly woody and glabrous throughout. Leaves mostly 10-12 cm long, 3.0-3.5 cm wide; petioles 2-4 mm long; blades narrowly elliptical, pinnately nervate, gradually tapering upon the petioles, the margins with minute well-spaced, denticulate teeth, but seemingly entire upon superficial inspection. Heads much-congested and terminal on stout peduncles 0.5-2.0 cm long, the syncephalous structure ca. 1.5 cm high and 2-3 cm across. Bracts ovate, glabrous, subcoriaceous, 8-10 mm long, 5-6 mm wide, not forming a well-defined involucre-bound head. Receptacle plane, glabrous. Pistillate florets 2, fertile; ligule absent, the tube ca. 1.5 mm long; achenes ellipsoid, glabrous, completely enclosed in fused, elliptical (in outline) bracts, the latter 6-7 mm long, ca. 2.5 mm wide, glabrous

throughout. Disk florets ca. 8, sterile, the style branches fused, forming a conical brush ca. 2 mm long; corollas white, glabrous, 5-lobed, the lobes ca. 1.4 mm long with ill-defined veins, these scarcely marginal, if at all; base of style surrounded by a well defined nectary ca. 0.75 mm high. Achenes of disk florets elongating at anthesis up to several times their bud-size so as to resemble stout stalks 5-10 mm long.

DISTRIBUTION (Figure 4) AND ECOLOGY: known only from type material.

As noted in the original description, this taxon is closely related to the more southern, *Desmanthodium guatemalense*; it differs in having narrower, more elliptical, nearly entire leaves, and being glabrous throughout, including all floral parts.

4. *DESMANTHODIUM FRUTICOSUM* Greenm., Proc. Amer. Acad. Arts 40:37. 1904. TYPE: MEXICO. Jalisco: Zapotlán, 9 Oct 1903, *E.W.D. Holway 5137* (HOLOTYPE: GH!).

Sprawling or arching shrubs or subshrubs 0.5-4.0 m high. Young stems pubescent in lines with crinkly brownish or tannish hairs, the vestiture mostly 0.3 mm high or less. Midstem leaves (of primary shoots) mostly 8-17 cm long, 3-7 cm wide; petioles 3-10 mm long; blades ovate to ovate-elliptic, sparsely appressed-pubescent beneath along the major veins, the margins variously dentate. Heads aggregated, the aggregations arranged in terminal rounded corymbose panicles 15-30 cm high and about as wide. Involucres subtended by 1-3 leathery, whitish, broadly ovate bracts, at anthesis mostly 4-6 mm long, 2-4 mm wide. Ray florets 1, pistillate fertile. Disk florets 4-8, the corollas white, 2-4 mm long, sparsely pubescent to nearly glabrous; lobes ca. 0.8 mm long. Chromosome number,  $2n = 36$ .

DISTRIBUTION (Figure 4) AND ECOLOGY: Western México from Durango to Oaxaca, occurring in pine-oak woodlands, 1800-2400 m; Aug-Oct.

REPRESENTATIVE SPECIMENS: MEXICO. Durango: "near summit on Durango Road," 10 Oct 1955, *Templeton 7643* (MICH). Nayarit: ca. 10 road mi E of Jacocotlán, on road to Tepic, 4 Oct 1952, *McVaugh 13360* (MICH). Jalisco: ca. 10 mi SSE of Autlán, 29 Sep 1960, *McVaugh 19548* (LL,MICH). Colima: 22 km NNW of Colima, Rancho El Jabali, 26 Aug 1988, *Sanders 8366* (TEX). Michoacán: Mpio. Coalcomán, 15.1 mi SW of Coalcomán, 12 Sep 1985, *Luckow 2915* (TEX). México: 12.5 mi SW of Temascaltepec, 12 Oct 1966, *Anderson 3945* (MICH). Guerrero: 62 road mi N of Acapulco, 20 Oct 1962, *Cronquist 9706* (MICH,NY,TEX). Oaxaca: ca. 10 mi N of Putla, 30 Oct 1970, *Cronquist 10855* (MICH,NY).

This species is represented in herbaria by numerous collections and is nicely illustrated by *McVaugh* (1984). The foliage is quite variable, leaves on secondary shoots being smaller and narrower than those on primary shoots. It is superficially similar to the shrubby *Desmanthodium perfoliatum*, the latter readily distinguished by its markedly perfoliate leaves. Occasional plants of *D. fruticosum* may possess ternate leaves (e.g., *Sundberg 2988* [NY]).

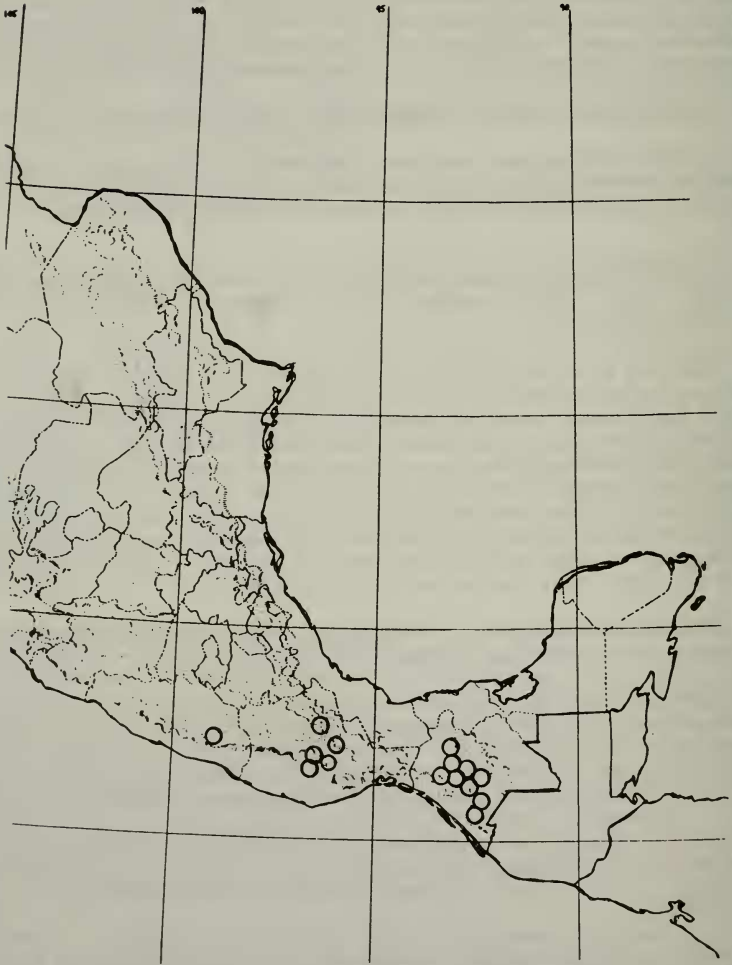


Figure 6. Distribution of *Desmanthodium perfoliatum*.

*Desmanthodium fruticosum* is closely related to *D. guatemalense* and the two might be reasonably combined. Both have shrubby habits and similar foliage, but the leaves of the latter are generally larger, thicker, and more nearly elliptic and less tapered at the base. Leaves on secondary shoots of both species tend to be smaller and narrower, making distinctions between these difficult. The two taxa are seemingly best distinguished by characters of the capitulescence, those of *D. fruticosum* possessing generally more numerous, smaller ultimate glomerules, the latter arranged in larger, more open, rounded cymose panicles. But, it must be admitted that occasional plants of *D. fruticosum* (e.g., *Templeton 7643* [MICH], from Durango), were these collected in Guatemala, because of their large heads and foliage, would surely have been annotated as *D. guatemalense*.

5. *DESMANTHODIUM TOMENTOSUM* T.S. Brandege, Univ. Calif. Publ. Bot. 6:73. 1914. TYPE: MEXICO. Chiapas: Cerro del Boquerón, Sep 1913, *Purpus 6683* (HOLOTYPE: UC!).

*Desmanthodium congestum* Arriagada & Stuessy, Brittonia 42:283. 1990. TYPE: MEXICO. Chiapas: San Vicente, 500 m, Aug 1938, *E. Matuda 2508* (HOLOTYPE: GH; Isotypes: LL!, MICH!).

Shrubs or subshrubs 1-3 m high; much resembling *Desmanthodium guatemalense* but the leaves thinner with somewhat larger blades which gradually taper onto the petioles, the latter 15-50 mm long; in addition the branches of the capitulescence are pubescent throughout (as opposed to pubescent in lines) with spreading tomentose hairs, as are the major veins beneath the blade.

DISTRIBUTION (Figure 4) AND ECOLOGY: Known only from southwesternmost Chiapas and closely adjacent Guatemala in pine-oak forests, 1500-2200 m; Aug-Nov.

REPRESENTATIVE SPECIMENS: MEXICO. Chiapas: Mpio. de Unión, Faldas del Volcán Tacana, 1500-1680 m, 18 Oct 1985, *Villaseñor Rios 864* (MEXU, TEX); SE side of Volcán Tacana above Talquian, 2200 m, 12 Nov 1972, *Breedlove 29482* (MO).

GUATEMALA: Prov. San Marcos: Finca Armenia, San Rafael pie de la Cuesta 10 Carrizal, past finca Africa, 1300-1600 m, 9-12 Aug 1980, *Dwyer 15316* (MO).

Arriagada & Stuessy (1990) thought their newly described *Desmanthodium congestum* to be sufficiently distinct so as to belong to a newly erected section *Multiaggregata*. They compared their taxon with both *D. tomentosum* and *D. perfoliatum*, noting its closer relationship with the former. Indeed, I am unable to distinguish *D. congestum* from *D. tomentosum*; their emphasis upon the more congested heads of the former is, in my opinion, illusionary, there being much variability and interpretational errors involved in ascertaining the number of heads involved in the ultimate aggregations of any given capitulescence, these varying from 4 to 24.

*Desmanthodium tomentosum* is sufficiently close to *D. guatemalense* so that a case might be made for their treatment as but varieties of a single species. Indeed, the type

of *D. congestum* itself, in pubescence, stands somewhere between these two taxa, although somewhat closer to *D. tomentosum* in leaf shape and texture.

6. *DESMANTHODIUM GUATEMALENSE* Hemsl., Biol. Centr. Amer. Bot. 2:142. t. 45. 1881. TYPE: GUATEMALA. Sacatepéquez: Volcán de Fuego, 6000 ft, (1860-1865), *Salvin s.n.* (HOLOTYPE: K).  
*Desmanthodium hondurensis* A. Molina, Ceiba 11:70. 1965. TYPE: HONDURAS. Comayagua: Barranco Trincheras, 1200 m, 28 Dec 1952, *Williams & Williams 18701* (HOLOTYPE: F).

Stiffly erect to subscandent shrubs to 3 m high. Much resembling *Desmanthodium fruticosum* but the midstem leaves mostly thicker, more nearly elliptic, broadest at or near the middle, the petioles shorter (unwinged portion), and the heads generally larger, arranged in rather flat-topped or broadly rounded capitulescences, mostly broader than wide.

DISTRIBUTION (Figure 4) AND ECOLOGY: Thickets along streams and slopes of volcanic cones, reportedly growing on volcanic ash in montane forests, 1200-3000 m; Jul-Nov.

REPRESENTATIVE SPECIMENS: GUATEMALA. Baja Verapaz: *King 3293* (TEX,UC). Chiquimula: *Molina R. 26812* (US). San Marcos: *Dwyer 15316* (US). Sacatepéquez: *Croat 41985* (MO,US). Suchitepéquez: *Skutch 1515* (LL).

HONDURAS: Comayagua: *Molina R. 31656* (MO). Itibuca: *Rodríguez 81* (MO). Ocotepeque: *Molina R. 30886* (MO).

EL SALVADOR: Santa Ana: *Croat 42367* (UC).

Typical elements of this Central American species (as shown in Figure 4), possess large relatively thick leaves upon their primary stems, the blade tapering upon the petiole nearly to its base. Additionally, the heads are arranged on relatively short, thick branches which tend to form a stout, broad, somewhat flattened capitulescence. Nevertheless, secondary branches often possess much smaller leaves, the blades gradually tapering upon longer petioles. The latter, often populational, forms have been given the name *Desmanthodium hondurensis*. Such forms are vegetatively very similar to *D. fruticosum*, but the two taxa are readily distinguished by their capitulescence, as noted in the above. Leaf variation on primary and secondary branches of *D. guatemalense* is neatly illustrated by M. Pahl in his delineation of the species for the Flora of Guatemala.

7. *DESMANTHODIUM BLEPHARODON* S.F. Blake, J. Wash. Acad. Sci. 14:454. 1924. TYPE: VENEZUELA. Trujillo: "Between La Puerta and Timotes", 2000 m, 16 Sep 1922, *Alfredo Jan 1143* (HOLOTYPE: US).

Much resembling *Desmanthodium guatemalense* but the leaves reportedly thicker, ovate, with 3-5 principal nerves, the blades broader near the base and pubescent along the lower margins; additionally the heads appear to be arranged in a rather evenly-

fasciculate manner, resembling the capitulescence of species belonging to the remotely related genus *Stevia*.

**DISTRIBUTION (Figure 5) AND ECOLOGY:** Known from only a few collections in Venezuela where it is "endémica de los páramos", according to Aristeguieta (1964); Sep.

According to its author, this taxon is nearest *Desmanthodium guatemalense*, the latter having "glaucous branches and thin-membranous, more or less rhombic-ovate, sessile leaves which are not ciliate at the base." *Desmanthodium blepharodon* is known to me only by the description and by an illustration in Aristeguieta (1964). It does appear very close to *D. guatemalense* but is maintained here because of its geographical isolation and because of its thicker, basally ciliate leaves.

#### EXCLUDED SPECIES

*Desmanthodium trianae* Hieron. = *Clibadium trianae* (Hieron.) S.F. Blake, Contr. Gray Herb., n. ser. 52:6. 1917.

#### ACKNOWLEDGMENTS

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#### LITERATURE CITED

- Aristeguieta, L. 1964. *Desmanthodium*, in Flora de Venezuela 10:383-384.  
Fay, J.J. 1974. In, IOPB Chromosome number reports XLV. Taxon 23:619-624.  
Kiel, D.J., et al. 1988. Chromosome studies in Asteraceae from the United States, Mexico, The West Indies and South America. Amer. J. Bot. 75:652-668.  
\_\_\_\_\_ & T.F. Stuessy. 1977. Chromosome counts of Compositae from Mexico and the United States. Amer. J. Bot. 64:791-798.  
McVaugh, R. 1984. *Desmanthodium*, in *Fl. Novo-Galiciana* 12:294-296. University of Michigan Press, Ann Arbor, Michigan.  
Ralston, B.G., et al. 1989. Documented plant chromosome numbers 1989: Chromosome numbers in Mexican Asteraceae with special reference to the tribe Tageteae. Sida 13:359-368.  
Robinson, H. 1981. A revision of the tribal and subtribal limits of the Heliantheae (Asteraceae). Smithsonian Contr. Bot. 51:1-102.

- Rydberg, P.A. 1915. *Flaveria*, in N. Amer. Fl. 34:142-146.
- Stuessy, T.F. & J.E. Arriagada. 1993. Chromosome counts in *Clibadium* (Compositae, Heliantheae) from Latin America. *Brittonia* 45:172-176.
- Sundberg, S., *et al.* 1986. Chromosome counts of Latin American Compositae. *Amer. J. Bot.* 73:33-38.
- Turner, B.L. 1996. *The Comps of Mexico: Vol. 6*. *Phytologia Memoirs* 10:1-93. Phytologia, Huntsville, Texas.